

REMARKS

This application has been reviewed in light of the Office Action dated December 14, 2007. Claims 1- 5 are presented for examination. Claim 1 has been amended to define still more clearly what Applicant regards as his invention. Claim 1 is in independent form. Favorable reconsideration is requested.

Claims 1-5 were rejected as obvious over [0002] - [0011] as admitted prior art combined with Huggins '268 or Japanese Patent '119. Huggins is said to teach applying an electric field between a substrate and a target. The admitted state of the art teaches ejecting particles and polarizing the layer on the substrate to form the film. In Huggins, the target is bombarded, particles dislodged are ionized by an electric field and the ionized particles attracted to a substrate of an opposite charge. JP '119 is read to teach spraying particles and subjecting them to an electric field to control polar axes.

The present invention employs a gas deposition procedure to form an oriented film. Particles are ejected (generally in the form of dispersed particles carried in a gas) from an ejecting device, such as a nozzle (in the form of a spray) toward a substrate on which a film is to be formed. A potential is applied between the ejecting means and the substrate to polarize and macroscopically orient the particles to form a deposited film with dipoles oriented in the direction of the electric field. See page 12, lines 3-9.

In contrast in the admitted state of the art, the dipoles of the individual crystal grains require heating, voltage application and the like to displace and re-orient the crystal grains in the deposited film, Page 5. Strain is caused during the displacement and realignment causing degraded dimensional accuracy, Page 6. Huggins fails to correct the defects of the admitted prior art.

Huggins is directed to a different kind of crystal film formation from particle ejection. In Huggins a gas is ejected into a chamber. The gas combines with a target such as aluminum and forms ions. The ions are attracted to a charged substrate to form a film. No particles are ejected from a device toward a substrate. No ejection is conducted from an ejecting device, except for inlet pipe 32. The target in Huggins is a passive plate as a source of metal, not an ejecting device. The “target” is not a mechanism designed to eject particles therefrom. It is totally passive in nature.

Since ions are formed and moved by electrostatic attraction, no polarization and orientation of electric dipoles of particles occurs. An artisan looking to deposit oriented particles from an ejection device such as a nozzle sprayer would have absolutely no motivation to look to Huggins since no particles are ejected or deposited. Further, there is no potential difference between an ejecting device and a substrate. In Huggins, the inlet pipe 32 is the “ejecting device”, since it ejects a gas. No potential is present between inlet pipe 32 and target 30. Target 30 is not the “substrate” upon which a film is deposited.

The defects of the admitted prior art and Huggins are not remedied by JP ‘119. In JP ‘119, particles are sprayed between a pair of electrodes 2 and 3. The particles orient themselves in a field 4 and deposit on an electrode. The particles are not ejected toward a substrate but are sprayed between a pair of electrodes. The potential is applied between a pair of electrodes, not between an ejecting device and a substrate. The particles in JP ‘119 are not ionized and then attracted to a substrate as in Huggins. Since the field is not applied between an ejecting device and a substrate, JP ‘119 does not permit a rapid deposition of polarized and macroscopically oriented particles ejected from the ejecting device and traveling toward the substrate.

Neither Huggins nor JP '119 teaches anything about positively ejecting particles from an ejecting device toward a substrate and orienting the particles in flight by a field between the ejecting device and substrate to form a deposited film with dipoles oriented in the direction of the electric field. Huggins, if at all, teaches use of an inlet pipe to eject gas to a target, not a substrate. No orientation occurs between the inlet pipe and target. No positive ejection occurs at the target, only a passive ionization of particles. JP '119 teaches nothing of ejecting particles toward a substrate and orienting them in flight prior to deposition. Instead, the particles are sprayed in a space between a pair of electrodes where their flight path must be altered as they are heading toward a substrate. This clearly slows deposition rate substantially.

The prior art fails to suggest the desirability of the present claimed invention. None of the cited references teaches the step of positively ejecting a particle from an ejection device toward a substrate in a potential field to orient the particles in flight prior to deposition on the substrate. It is not enough that a prior art device “may be capable of being modified to run the way the (invention) is claimed, there must be a suggestion in the reference to do so”, In re Mills, 16 USPQ2d 1430 (Fed. Cir. 1990), M.P.E.P. 2143.01 (III).

In the “Response to Amendment” section of the outstanding official action, the Examiner noted the claims did not require a polarizing or orienting of ejected particles by an electric field. The claims have now been amended to explicitly recite what was implicitly present therein.

The combination of references fails to teach all the claim limitations and, accordingly, no *prima facie* case of obviousness is raised M.P.E.P §§ 2143. The combination of references fails to teach, *inter alia*, applying a potential between an ejecting device or between the vicinity of the ejecting device and a substrate sufficient to polarize and orient the particles to

form a film with oriented dipoles. Since no *prima facie* case of obviousness has been raised, there is no need to rebut a non-existent presumption of obviousness by showing unexpected results.

In view of the foregoing amendments and remarks, Applicant respectfully requests that the claims be allowed and the case be passed to issue.

Applicant wishes to interview the Examiner to resolve any further issues which may remain. Accordingly, the Examiner is requested to contact the undersigned after reviewing this response to discuss advancing prosecution.

Applicant's undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

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